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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,015	12/15/2003	Nobutaka Ihara	0941.68799	4153

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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/736,015

Applicant(s)

IHARA ET AL.

Examiner

William J. Klimowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/799,949.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continuation

This examined application is a divisional of U.S. Patent Application No. 09/799,949 filed on March 6, 2001, now U.S. patent No. 6,700,761.

The Applicants have voluntarily cancelled claims 1-6, 10 and 11.

Claims 7-9 are currently pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Johnson (US 5,654,566).

As per claim 7, Johnson (US 5,654,566) discloses a magnetic sensor (e.g., see FIG. 4 in conjunction with FIG. 6B) that senses an external magnetic field using a spin-filtered sensor current flowing (I) through a non-magnetic layer (e.g., 112; 204, 208); and further comprising: a pair of ferromagnetic bodies (F1, F2; 220, 230) provided on the non-magnetic layer (112; 204, 208) and positioned parallel to an axis of magnetization (118, 120) of each of the ferromagnetic bodies (F1, F2; 220, 230); and a power source (e.g., voltage source - V_R) that uses the ferromagnetic bodies (F1, F2; 220, 230) as electrodes to supply the sensor current (I); wherein:

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the non-magnetic layer (112; 204, 208) is formed of a semiconductor material; and the axis of magnetization (e.g., 120) of one of the pair of ferromagnetic bodies (F2; 230) changes so as to detect an external magnetic field, and wherein said semiconductor material constituting said non-magnetic layer (e.g., 112; 204, 208) causes to flow a current (I) therethrough from one of said ferromagnetic bodies (F1, F2; 220, 230) to the other of said ferromagnetic bodies (F1, F2; 220, 230).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US 5,654,566).

See the description of Johnson (US 5,654,566), *supra*.

As per claims 8 and 9, Johnson (US 5,654,566) remains silent with respect to wherein the semiconductor material is indium aluminum arsenide or indium gallium arsenide, respectively.

Official notice is taken that magnetic sensors of the type disclosed by Johnson (US 5,654,566) wherein the semiconductor material is indium aluminum arsenide or indium gallium arsenide, is notoriously old and well known and ubiquitous in the art; such Officially noticed fact being capable of instant and unquestionable demonstration as being well-known.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the semiconductor material of Johnson (US 5,654,566) as being either of indium aluminum arsenide or indium gallium arsenide, as is known.

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the semiconductor material of Johnson (US 5,654,566) as being either of indium aluminum arsenide or indium gallium arsenide, as is known in order to provide enhanced ohmic contact and/or a desired/prescribed level of channel conductivity between the source and drain, in a manner that is well known, established and appreciated in the art.

The Applicants allege that Johnson (US 5,654,566) does not disclose the invention, as set forth in the amended claim 7, stating:

The magnetic sensor disclosed by Johnson (Figs. 4, 6B) requires the presence of a gate electrode on the semiconductor layer that constitutes the nonmagnetic layer. Johnson further requires that the ferroelectric bodies 110, 116 are formed on respective source and drain diffusion regions that are formed in the semiconductor layer with a conductivity type opposite to that of the semiconductor layer itself. According to this configuration, conduction between the ferroelectric bodies 110, 116 cannot occur even when the magnetization directions are parallel in these bodies unless a gate voltage is first applied to the gate electrode on the semiconductor layer, and a conductive channel is induced a current does flow through the between the respective diffusion regions. Although semiconductor layer in such an instance, this current flow is not caused by the semiconductor material of the layer, but instead only by the application of a gate voltage to the gate electrode. Accordingly, Johnson's disclosure cannot read upon the present invention.

As noted above, claim 7 of the present invention has been amended to more clearly recite that it is the semiconductor material that constitutes the nonmagnetic layer that itself causes a current to flow from one of the ferromagnetic bodies to the other. As also described above, Johnson's configuration cannot read upon this specific feature of the present invention, because the material of Johnson's

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semiconductor layer cannot by itself cause a current to flow from one body to the other. Johnson can only cause such a current flow with the application of a gate voltage. Accordingly, for at least these reasons, the Section 102 rejection of claim 7 based on Johnson is respectfully traversed.

The Examiner respectfully disagrees with the Applicants based on the invention, as presently claimed, the disclosure of Johnson (US 5,654,566), and patent law.

More concretely, as per claim 7, Johnson (US 5,654,566) discloses a magnetic sensor (e.g., see FIG. 4 in conjunction with FIG. 6B) that senses an external magnetic field using a spin-filtered sensor current flowing (I) through a non-magnetic layer (e.g., 112; 204, 208). A pair of ferromagnetic bodies (F1, F2; 220, 230) are provided on the non-magnetic layer (112; 204, 208) and positioned parallel to an axes of magnetization (118, 120) of each of the ferromagnetic bodies (F1, F2; 220, 230). A power source (e.g., voltage source - V_R) is provided that uses the ferromagnetic bodies (F1, F2; 220, 230) as electrodes to supply the sensor current (I). The non-magnetic layer (112; 204, 208) is formed of a semiconductor material. The axis of magnetization (e.g., 120) of one of the pair of ferromagnetic bodies (F2; 230) changes so as to detect an external magnetic field.

Additionally, the semiconductor material constituting the non-magnetic layer (e.g., 112; 204, 208) causes to flow a current (I) therethrough from one of the ferromagnetic bodies (F1, F2; 220, 230) to the other of the ferromagnetic bodies (F1, F2; 220, 230).

There is absolutely nothing in the claimed invention that would structurally or functionally preclude a gate electrode. That is, while the gate electrode affects the ability of the current to flow through the semiconductor material, the semiconductor material constituting the non-magnetic layer (e.g., 112; 204, 208) causes to flow a current (I) therethrough from one of

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said ferromagnetic bodies (F1, F2; 220, 230) to the other of said ferromagnetic bodies (F1, F2; 220, 230). For if the semiconductor were not formed, there could be no current at all.

The Examiner notes that the claim preamble includes the transitional term “comprising” (i.e., a “magnetic sensor that senses an external magnetic field using a spin-filtered sensor current flowing through a non-magnetic layer, *comprising*”).

As pointed out in case law and MPEP § 2111.03, such transitional language does not preclude elements other than those specifically claimed. MPEP § 2111.03 states:

The transitional term “comprising”, which is synonymous with “including,” “containing,” or “characterized by,” is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1368, 66 USPQ2d 1631, 1634 (Fed. Cir. 2003) (“The transition ‘comprising’ in a method claim indicates that the claim is open-ended and allows for additional steps.”); *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) (“‘Comprising’ is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.”); *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) (“comprising” leaves “the claim open for the inclusion of unspecified ingredients even in major amounts”).

Thus, the fact that Johnson (US 5,654,566) uses a gate electrode to control current flow through the sensor, in no way is precluded by the claims as currently amended.

It is noted that the Applicants have not seasonably challenged the Examiner’s position regarding the use of Official notice as taken in the previous Office action (mailed June 23, 2005) by requesting “a demand for evidence.”

As has been established in patent practice, as articulated in the MPEP § 2144.03:

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If applicant does not seasonably traverse the well known statement during examination, then the object of the well known statement is taken to be admitted prior art. *In re Chevenard*, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well known statement in the next reply after the Office action in which the well known statement was made. This is necessary because the examiner must be given the opportunity to provide evidence in the next Office action or explain why no evidence is required. If the examiner adds a reference to the rejection in the next action after applicant's rebuttal, the newly cited reference, if it is added merely as evidence of the prior well known statement, does not result in a new issue and thus the action can potentially be made final. If no amendments are made to the claims, the examiner must not rely on any other teachings in the reference if the rejection is made final.

Since the Applicants did not seasonably traverse the well known statement during examination, the object of the well known statement has been taken to be admitted prior art.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

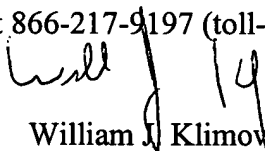
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (571) 272-7577. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William J. Klimowicz
Primary Examiner
Art Unit 2652

WJK